



HAZARD CLASS/DIVISION (HC/D), FIRE SYMBOLS, AND COMPATIBILITY GROUPS



HC/D, FIRE SYMBOLS, AND COMPATIBILITY GROUPS



Overview

- Hazard Class/Divisions
- Fire Hazard Symbols/Transportation Placards
- Compatibility Groups (storage and transportation)
- Security Risk Categories



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Hazard Class

- There are a total of nine different hazard classes.
- Each hazard class is based on chemical and physical characteristics of the material and its reaction under various conditions.
 - Hazard Class 1 - Explosives
 - Hazard Class 6 - Toxic and infectious substances



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Hazard Class/Division

- Hazard Class 1 is composed of 6 divisions:
 - Division 1 - Mass Explosion
 - Division 2 - Fragment Producing
 - Division 3 - Mass Fire
 - Division 4 - Moderate Fire
 - Division 5 - Very Insensitive
 - Division 6 - Extremely Insensitive

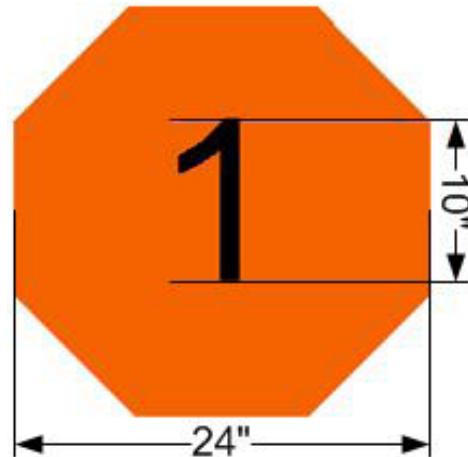


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Symbols/Placards

- Fire Symbol 1 / Transportation Placard 1.1
 - Do not attempt to fight fire unless a rescue attempt is being made
 - Withdrawal distance is:
 - 2,500 ft for $\leq 15\text{K NEW}$
 - 4,000 ft for $>15\text{K NEW}$
 - $D=105w^{1/3}$ ft $>50\text{K NEW}$ ($^{1/3}$ is cube root)
 - Examples - Hand Grenades, general purpose bombs, and 40 mm HEDP

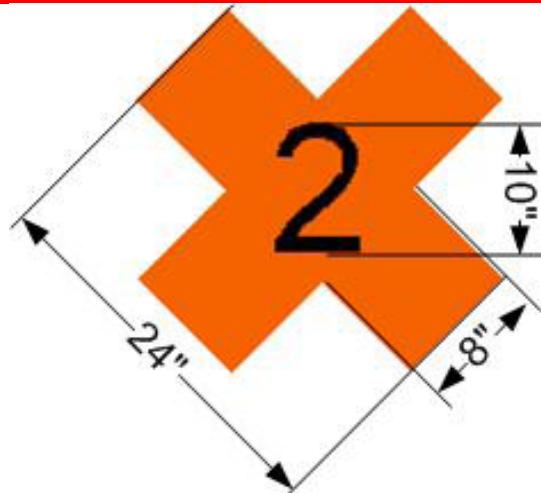




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- Fire Symbol 2 / Transportation Placard 1.2
 - Do not attempt to fight fire unless a rescue attempt is being made
 - Attempt to extinguish the fire if it is in an early stage. Prevent spreading of the fire if possible.
 - Withdrawal distance is **2,500 ft**
 - Examples - HE mortars, tank rounds

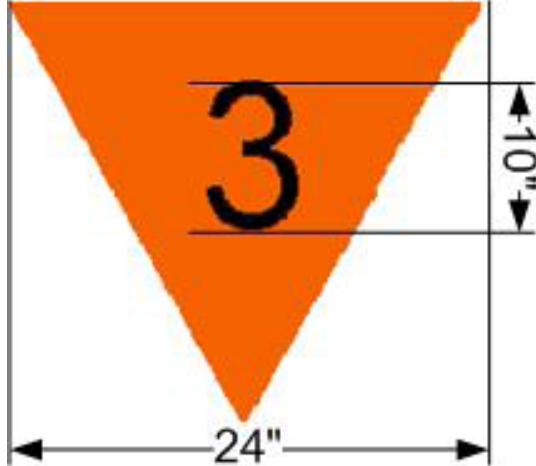




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- Fire Symbol 3 / Transportation Placard 1.3
 - These fires may be fought if explosives are not directly involved.
 - Withdrawal distance is **600 ft**
 - Examples - 155mm Illum rds, Flares, and signal illum.

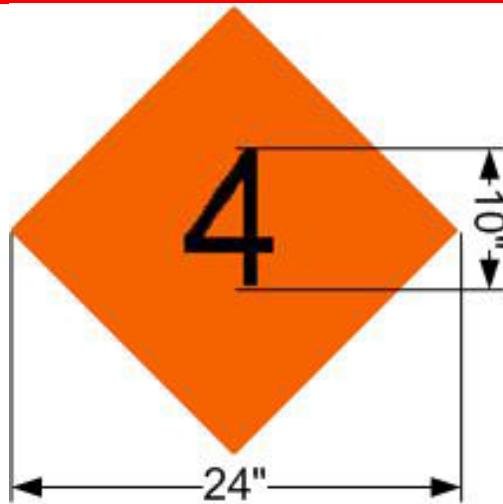




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- Fire Symbol 4 / Transportation Placard 1.4
 - Do not attempt to fight fire unless a rescue attempt is being made
 - Fight these Fires
 - Withdrawal distance is **300 ft**
 - Examples - 7.62mm, 5.56mm, 45 cal, and 9mm ammunition





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Chemical Hazard Symbols

- Set 1
 - Round Sign with red border, blue background and a red figure in protective clothing.
 - Indicates the presence of a highly toxic chemical agent.
 - Examples - Nerve and Blister Agents





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- Set 2
 - Round Sign with a yellow border, blue background with a yellow figure in protective clothing
 - Indicates the presence of harassing agents.
 - Response will be from an upwind direction in protective clothing.
 - Examples - Choking gases, vomiting agents, and screening smokes.





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- Set 3
 - Round Sign with white border, blue background, white figure in protective clothing.
 - Indicates the presence of white phosphorus
 - Response approach if smoke is present will be in full protective clothing





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- **Apply No Water!**
 - If water is added, it could intensify the flames.
 - Munitions burn with extremely high temperatures and are difficult to extinguish.
 - Do not look directly at material since eye damage may result.





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- Wear Breathing Apparatus
 - This indicates the presence of **toxic smokes**.
 - Protective mask is required for fighting these fires.
 - The gas mask that you are issued is not the mask you want to use.
 - Do not use water.





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Compatibility Groups

- Based on the type/degree of risk the A&E items present in storage and transportation.
- A&E is assigned to a storage compatibility group (SCG) when they can be stored / transported together without increasing significantly either the probability of an accident or for a given quantity, the magnitude of the effects from such an accident.
- A&E is further categorized in to 13 compatibility groups.
 - A, B, C, D, E, F, G, H, J, K, L, N, S



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- **A:** Bulk initiating explosives that have the necessary sensitivity to heat, friction or percussion (RDX/PETN)
- **B:** Detonators and similar initiating devices not containing two or more independent safety features (Blasting Caps)
- **C:** Bulk propellants, propelling charges & devices containing propellant with or without their own means of ignition.
- **D:** Black powder, HE & ammo containing HE without its own means of initiation & w/o propelling charge (Demo)
- **E:** HE & ammo containing HE without its own means of initiation & w/o propelling charge HE (Arty/Rockets)



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- **F:** Ammo Containing HE with its own means of initiation & with Propelling Charge (Frag Grenades)
- **G:** Fireworks, illuminating, incendiary & smoke (Pyro & Small Arms)
- **H:** Ammo containing both explosives & WP
- **S:** Ammo presenting no significant hazard (Small Arms)



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Table 3-10. Storage Compatibility Chart for Shore Activities

GROUPS	A	B	C	D	E	F	G	H	J	K	L	N	S
A	X	Z											
B	Z	X	Z	Z	Z	Z	Z					X	X
C		Z	X	X	X	Z	Z					X	X
D		Z	X	X	X	Z	Z					X	X
E		Z	X	X	X	Z	Z					X	X
F		Z	Z	Z	Z	X	Z					Z	X
G		Z	Z	Z	Z	Z	X					Z	X
H								X					X
J									X				X
K										Z			
L													
N		X	X	X	X	Z	Z					X	X
S		X	X	X	X	X	X	X	X			X	X



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Notes

1. The marking “X” at an intersection of the above chart indicates that these groups may be combined in storage. Otherwise, mixing is either prohibited or restricted per note 2 below.
2. The marking “Z” at an intersection of the above chart indicates that, when warranted by operational considerations or magazine non-availability, and when safety is not sacrificed, logical mixed storage of some items of different groups may be authorized by NOSSA upon written request. Mixing of limited quantities of some groups, as authorized by note 5 below, does not require a written request. Authorization is not to be considered a waiver. Combinations that violate the principles of paragraph 3-9 require justification by waiver or exemption. Examples of acceptable combinations of class 1 are:
 - a. Division 1, group A initiating explosives with division 1, group B fuzes not containing two or more independent safety features.



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3. Equal numbers of separately packaged components of complete rounds of any single type of ammunition may be stored together. When so stored, compatibility is that of the assembled round; i.e., WP filler in group H, HE filler in groups D, E, or F, as appropriate.
4. Ammunition designated "practice" by NSN and nomenclature may be stored with the fully loaded ammunition it simulates.
5. Mixing of compatibility groups (except items in groups A, K, and L) is authorized when the total quantity does not exceed 1,000 pounds NEW. Mixed storage that exceeds 1,000 pounds NEW must be approved by NOSSA.
6. Mixing in storage of hazard Class 1 ammunition or ammunition components with hazard Class 2 through 9 ammunition or ammunition components, or with non-regulated items assigned a compatibility group, is authorized, provided storage is in accordance with the compatibility group assigned.



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Table 2-6. Compatibility Requirements for Class 1 (Explosive) Materials Loaded On and Transported by Motor Vehicle Over Public Highway or by Railcar

Compatibility Group	A	B	C	D	E	F	G	H	J	K	L	N	S
A		X	X	X	X	X	X	X	X	X	X	X	X
B	X		X	X(4)	X	X	X	X	X	X	X	X	4/5
C	X	X		2	2	X	6	X	X	X	X	3	4/5
D	X	X(4)	2		2	X	6	X	X	X	X	3	4/5
E	X	X	2	2		X	6	X	X	X	X	3	4/5
F	X	X	X	X	X		X	X	X	X	X	X	4/5
G	X	X	6	6	6	X		X	X	X	X	X	4/5
H	X	X	X	X	X	X	X		X	X	X	X	4/5
J	X	X	X	X	X	X	X	X		X	X	X	4/5
K	X	X	X	X	X	X	X	X			X	X	4/5
L	X	X	X	X	X	X	X	X	X	X	1	X	X
N	X	X	3	3	3	X	X	X	X	X	X		4/5
S	X	4/5	4/5	4/5	4/5	4/5	4/5	4/5	4/5	4/5	X	4/5	



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- For motor vehicles the letter “X” in the table indicates that explosives of different compatibility groups may not be carried on the same transport vehicle. For railcars the letter “X” indicates that explosives of different compatibility groups may not be carried on the same railcar unless packed in separate freight containers (e.g. two or more freight containers mounted upon the same railcar).
 - means explosives from compatibility group L may only be carried on the same motor vehicle or railcar with an identical explosive.
 - means any combination of explosives from compatibility group C, D, or E is assigned to compatibility group E.
 - means any combination of explosives from compatibility group C, D, or E with those in compatibility group N is assigned to compatibility group D.



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4. means detonators and detonating primers, Division 1.4S (Class C explosives), may not be loaded in the same railcar with Division 1.1 and 1.2 (Class A explosive) materials as described in 49 CFR 174.81 (g)(3)(iv). Also, see 49 CFR 177.835 (g) for restrictions of detonator assemblies, boosters with detonators, and detonators on public highway.
5. means Division 1.4S fireworks may not be loaded in the same motor vehicle or rail car with Division 1.1 or 1.2 (Class A explosive) materials.
6. means explosive articles in compatibility group G, other than fireworks and those requiring special stowage, may be stowed with articles of compatibility groups C, D and E, provided no explosive substances are carried in the same vehicle.



Questions